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I cannot but suspect that the performance of this telescope is affected by temperature, and that severe tests in the summer months might afford different conclusions to those which I have arrived at ; but as I considered my opinion was desired on the instrument in its present state, I took no means for applying artificial heat. And, perhaps, the secondary spectrum which haunts the field might be mitigated, and the prismatic colours destroyed, by an alteration of the distance between the fluid and outer lenses ; but the same consideration prevented my applying for a screw, by which it might have been effected.

But there is one condition of the instrument which, if correct, would be of greater importance than the rest, as connected with this Report. It strikes me forcibly, from the several effects I observed, that the focus has been cut too short ; a defect which would seriously affect the spherical aberration of the outer or object lens and its dispersion : and this would account for the fluid refractor not performing better than the flint-glass one, without impugning the corrective powers of the sulphuret of carbon, or its skilful application by the scientific Professor.

April 4, 1833.

W. H. SMYTH.

A paper was then read, entitled, " An Account of some Experiments made in the West Indies and North America, to determine the relative Magnetic Forces, in the years 1831, 32, and 33." By the Rev. George Fisher, M.A., F.R.S.

The experiments of which the results are given in this paper were made by Mr. James Napier, late Master of H. M. S. Winchester. The needles were precisely similar to those used in the experiments described by the author in a former paper ; and the observations were made with great care, and repeated several times at the same places ; by which it appeared that the intensities of the needles continued unchanged during the whole period of the experiments ; and the mean of all those made at one place was taken as the result. From these the relative forces at different places were computed, and stated in the form of a table.

A paper was also read, entitled, " On the Theory of the Moon." By John William Lubbock, Esq., V.P. and Treas. R.S.

M. Poisson, in a memoir which he has lately published on the Theory of the Moon, expresses the three coordinates of her path, namely, her true longitude, her distances, and her true latitude, in terms of the time. The author observes that the reasons for so doing adduced by M. Poisson, are the same as those which led Mr. Lubbock also to deviate from the course which had previously been always pursued by mathematicians, and to employ equations in which the true longitude is the independent variable. Instead, however, of integrating the equations of motion by the method of indeterminate coefficients, as the author had proposed, M. Poisson recommends the adoption of the method of the variation of the elliptic constants. In the present paper, Mr. Lubbock states the reasons which have determined him not to employ the latter method, founded chiefly on the advantages of obtaining complete uniformity in the methods used in the theories